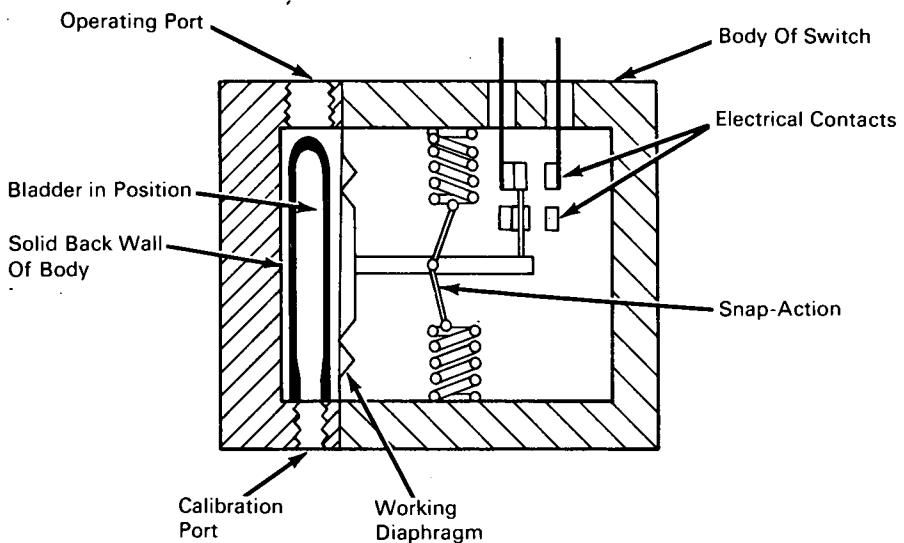


# NASA TECH BRIEF



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## Inflatable Bladder Provides Accurate Calibration of Pressure Switch



**The problem:** To accurately check the calibration of a pressure switch with minimum disturbance to normal operation of the switch. The use of a second, or calibration diaphragm can introduce errors related to differences in spring rates. It may also permit the calibration fluid to interact with the operational fluid.

**The solution:** A thin-walled, circular bladder is placed inside the pressure switch and connected to an independent external pressure source that causes the bladder to expand and apply a force to the switch diaphragm.

**How it's done:** In calibrating the pressure switch, pressure at the operating port is first removed. Calibration pressure is then applied to the calibration port, inflating the bladder and applying an equally

distributed force to the surface of the switch diaphragm. Because the calibration bladder exhibits practically zero spring rate, negligible work is done in the inflating process and pressure applied to the switch diaphragm by the bladder is essentially the same as normal working pressure. When working pressure is reapplied to the operating diaphragm and calibration pressure is removed, the bladder collapses and seals off the calibration port.

### Notes:

1. The bladder, if formed of a suitable inert elastic material, would be useful with a wide variety of fluids.
2. This technique may be used with any conventional pressure switch where periodic calibration checks are desirable during normal usage.

(continued overleaf)

3. Inquiries concerning this invention may be directed to:

Technology Utilization Officer  
Marshall Space Flight Center  
Huntsville, Alabama, 35812  
Reference: B65-10279

**Patent status:** NASA encourages the immediate commercial use of this invention. Inquiries about obtaining rights for its commercial use may be made to NASA, Code AGP, Washington, D.C., 20546.

Source: Norman J. Smith of  
The Boeing Company  
under contract to  
Marshall Space Flight Center  
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